CARDI·OH

Ohio Cardiovascular and Diabetes Health Collaborative

SCHOOL OF MEDICINE
CASE WESTERN RESERVE UNIVERSITY

In partnership with:

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

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Project ECHO®

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Cardi-OH ECHO

Your Patient with Diabetes at Risk for Heart Disease: A Series of Case Discussions

December 9, 2021

Cardi-OH ECHO Team and Presenters

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Disclosure Statements

- The following planners, speakers, and/or content experts of the CME activity have financial relationships with commercial interests to disclose:
  - Marilee Clemons reports receiving consulting fees from Novo Nordisk.
  - Kathleen Dungan, MD, MPH reports receiving consulting fees from Eli Lilly, Novo Nordisk and Boehringer, research support from Sanofi, , Viacyte, and Abbott and presentation honoraria from UpToDate, Elsevier, ACHL, and CMHC.
  - Adam T. Perzynski, PhD reports being co-owner of Global Health Metrics LLC, a Cleveland-based software company and royalty agreements for book authorship with Springer Nature publishing and Taylor Francis publishing.
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  - These financial relationships are outside the presented work.
- All other planners, speakers, and/or content experts of the CME activity have no financial relationships with commercial interests to disclose.

Person-Centered Language Recommendations

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The ADA and the APA recommend language that emphasizes inclusivity and respect:

- **Gender**: Gender is a social construct and social identity; use term “gender” when referring to people as a social group. Sex refers to biological sex assignment; use term “sex” when referring to the biological distinction.
- **Race**: Race is a social construct that is broadly used to categorize people based on physical characteristics, behavioral patterns, and geographic location. Race is not a proxy for biology or genetics. Examining health access, quality, and outcome data by race and ethnicity allows the healthcare system to assist in addressing the factors contributing to inequity and ensure that the health system serves the needs of all individuals.
- **Sexual Orientation**: Use the term “sexual orientation” rather than “sexual preference” or “sexual identity.” People choose partners regardless of their sexual orientation; however, sexual orientation is not a choice.
- **Disability**: The nature of a disability should be indicated when it is relevant. Disability language should maintain the integrity of the individual. Language should convey the expressed preference of the person with the disability.
- **Socioeconomic Status**: When reporting SES, provide detailed information about a person’s income, education, and occupation/employment. Avoid using pejorative and generalizing terms, such as “the homeless” or “inner-city.”

Flanagin A et al., 2021, JAMA; Dickinson JK et al., Diabetes Care, 2017; American Psychological Association, 2021; ODM, 2021.

Mental Illness and Cardiovascular Health

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Objectives

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1) Describe the epidemiology and outcomes of diabetes among patients with chronic mental illness.

2) Describe the impact of treatments for chronic mental illness, including atypical antipsychotic medications on weight and overall cardiovascular health.

3) List and describe a minimum of 3 strategies to improve cardiovascular health among patients with chronic mental illness.

What is CMI?

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- Many mental illnesses are chronic (GAD, BPD, AN)
- “CMI” often interchangeable with “SMI”
  - Persistently debilitating psychiatric symptoms
  - Severely impaired functioning
- **Schizophrenia**
- Bipolar Affective Disorder
- Treatment-Resistant Recurrent Depression

Medical Comorbidity

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- CMIs such as recurrent depression, bipolar disorder and schizophrenia generally complicate general health outcomes
- CMI is often accompanied by additional mental health comorbidities such as substance abuse and PTSD
- CMI inflates costs of medical comorbidities
- CMI life-span reduced by **10-30 years**
- CMI have a **1.2 to 4.9 increase in mortality** compared to age and sex-matched individuals from the general population ***resulting from DM, cardiovascular disease, and stroke***

Colton CW, Manderscheid RW. Preventing Chronic Disease 3: A42: 2006
Whiteman, K. L et al. *Psychiatric Services* *67*(11), 1213–1225.2016
Walker, E. R. et al *JAMA psychiatry*, *72*(4), 334–341. 2015

Increased Medical Burden

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Modifiable Risk Factors	Estimated Prevalence and Relative Risk (RR)	
	Schizophrenia	Bipolar Disorder
Obesity[1-5]	45–55%, 1.5–2 × RR	21–49%, 1–2 × RR
Smoking[4-8]	50–80%, 2–3 × RR	54–68%, 2–3 × RR
Diabetes[2, 8-11]	10–15%, 2 × RR	8–17%, 2 × RR
Hypertension[2-4, 7-9, 11]	19–58%, 2–3 × RR	35–39%, 2 × RR
Dyslipidemia[2, 4, 11-13]	25%, ≤ 5 × RR	23%, ≤ 5 × RR

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Diabetes in CMI

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- Risk of DM 1.2-2.6x higher in depression of any type
- Prevalence of DM 4-5x higher in CMI
- Age of onset of DM 10-20 years earlier in CMI
- Why?
  - Increased prevalence of well-established DM risk factors
  - Disease-specific risks
  - Treatment-specific risks
- Risk determinations may be different from the general population…

Barnett AH, et al, J Psychopharmacol. 2007
Carnethon MR, et al, Am J Epidemiol. 2003
De Hert M, et al, Eur Psychiatry. 2009
McEvoy JP, et al Schizophr Res. 80(1):19-32.2005
Whiteman, K. L et al. *Psychiatric Services* *67*(11), 1213–1225.2016

Schizophrenia-Specific DM Risk

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- **Genetic susceptibility**
  - Higher occurrence of DM in family members of people with schizophrenia
  - Abnormal glucose metabolism
  - Common mechanism proposed for cognitive deficit and glucose metabolism
- **Neuroendocrine pathways**
  - Hypothalamic axis dysregulation and elevated cortisol in schizophrenia
  - Nutritional deficiencies proposed as common pathway for both diseases
- **Antipsychotic medications**
  - Effect on hypothalamic regulation, dopaminergic, serotonergic, and histaminergic receptors
  - Other proposed mechanisms: action on pancreatic muscarinic receptor and leptin resistance
- **Environmental/additional comorbidity**
  - Diet and lack of access to quality foods
  - Inadequate physical activity due to symptoms and social isolation

Anamalie. Int J Endocrinology. Volume 2015 |Article ID 969182 | https://doi.org/10.1155/2015/969182

Minimizing Metabolic Liability

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- Young, drug–naïve patients are particularly vulnerable to weight gain
- Use SGAs with high metabolic liability conservatively and ***limit off–label use***
- Screening and monitoring per ADA guidelines
- Patients with significant weight gain should be switched to a lower metabolic liability SGA
- Metformin may help young patients with limited exposure to antipsychotic drugs if lifestyle interventions fail and switching the SGA is not an option. However, benefits may be modest.

Hasnain M, Vieweg WV, Hollett B. Postgrad Med. 2012 Jul; 124(4):154-67

Antidepressant Drugs and DM Risk in CMI

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- Antidepressants associated with new-onset DM
  - Meta-analysis OR = 1.50
  - Only observational studies (insufficient for causation)
- Increased DM risk with TCAs and SSRIs (OR = 1.89)
- When treating depression or anxiety, remember paroxetine and mirtazapine are associated with weight gain
- Bupropion may cause modest weight loss
- Other second-generation antidepressants are mostly weight neutral, but individual variations may occur
- *DM risk with antidepressants might be elevated with long-term use of TCA or SSRIs and/or in high-risk patients*
- *Titrate and taper these medications!*

Bhattacharjee S, et al, Diabetes Metab Res Rev. 29(4):273-84.2013
Brown LC, et al, Diabetes Res Clin Pract. 79(1):61-7.2008
Rubin RR, et al Diabetes Care. 2008 Mar; 31(3):420-6.

Supporting Adults with Comorbid DM & CMI

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- Standard **diabetes education** needs to accommodate possible cognitive deficits and/or significant mood states that may make knowledge accumulation and retention challenging
- Prescribe psychotropic drugs that minimize metabolic/weight gain propensity
- Optimize outcomes of psychiatric comorbidity (SUD, depression)
- Self-management support that addresses bio-behavioral factors
- Collaborative or integrated care models that include behavioral medicine

Anamalie. Int J Endocrinology. Volume 2015 |Article ID 969182 |
https://doi.org/10.1155/2015/969182
https://store.samhsa.gov/sites/default/files/d7/priv/sma13-4780.pdf

Thank you!

Questions/Discussion